

DESCRIPTION OF A NEW SPECIES OF PECTINID BIVALVE FROM THE JUAN FERNANDEZ ISLANDS, CHILE

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Plate 6

SUMMARY

Chlamys phalara, sp. nov., is described from material trawled off Juan Fernandez Island in 80-200 metres. What is apparently the same species was previously recorded from the Chilean mainland under the erroneous identification, *Chlamys amandi* (Hertlein, 1953). The holotype of the latter species is discussed.

INTRODUCTION

A suite of scallop shells of the pectinid genus *Chlamys*, sent in 1969 to the Geology Department of the California Academy of Sciences by Dr. Harold Vokes, Tulane University, constitutes the first record of the family Pectinidae from Juan Fernandez Island (Isla Más á Tierra), 580 km west of the coast of mainland Chile. Dr. Vokes submitted the specimens for study by the late Dr. Leo George Hertlein, a specialist on Pectinidae, who tentatively identified them as *Chlamys amandi* (Hertlein, 1935). The specimens are, in addition, almost certainly conspecific with those from south-central Chile mentioned and figured by Soot-Ryen (1959), also under the name *Chlamys amandi*. The holotype of *C. amandi*, however, kindly located and photographed for me by Dr. Nibaldo Bahamonde N. of the Museo Nacional de Historia Natural, Santiago, Chile, and discussed below, proves to be an entirely different form. The Juan Fernandez specimens, although apparently closely related to a species of the Chilean Pliocene, stand in need of a new name and description, which are supplied here. In response to my request, Dr. Vokes generously supplied additional material for study.

For assistance in this investigation, I express my gratitude to Harold and Emily Vokes, Tulane University; J. D. Taylor and Solene Whybrow, British Museum (Natural History); Rudolph Kiliyas, Zoologisches Museum, Humboldt-Universität, Berlin; Nibaldo Bahamonde N., Museo Nacional de Historia Natural, Santiago; Louie N. Marinovich, United States Geological Survey; and Allyn G. Smith and William Light, California Academy of Sciences.

TAXONOMY

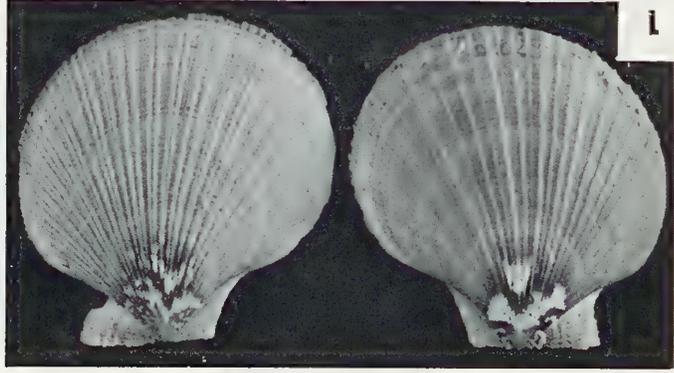
FAMILY PECTINIDAE RAFINESQUE

Genus *Chlamys* Röding in Bolten

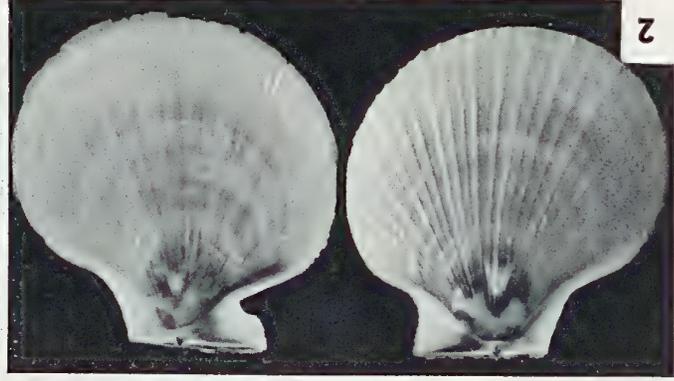
Chlamys phalara sp. nov.

Pl. 6, fig. 1 - 4

[?] *Chlamys amandi* (Hertlein): Soot-Ryen, 1959: 30, pl. 1, fig. 7-8.



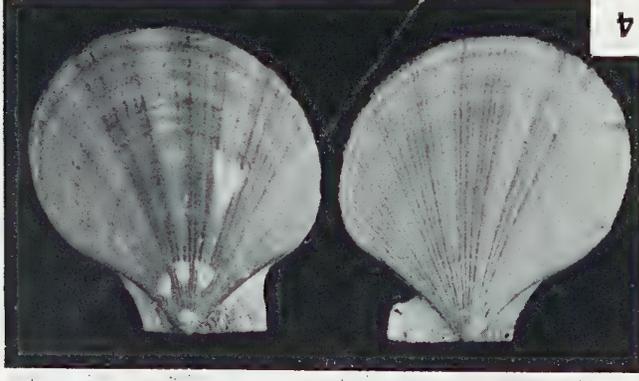
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- PLATE 6. *Chlamys phalara* Roth, sp. nov.
1. Holotype, No. 54752 (California Academy of Sciences, Department of Geology), trawled off Juan Fernandez Island (Isla Mas a Tierra), Chile, in 80-200 metres. Exterior of left and right valves; height 38.6 mm.
 2. Interior of left and right valves of same specimen.
 3. Paratype, No. 54753 (CASG), from same locality. Exterior of right and left valves; height 32.5 mm.
 4. Paratype, No. 54754 (CASG), from same locality. Exterior of right and left valves; height 34.0 mm.

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Description: Shell thin, subcircular, more or less oblique in outline; compressed, left valve slightly more inflated than right. Right valve sculptured with about 30 to 40 low, rounded ribs, many of which split into groups of two or three riblets; ribs smooth near the beak and very finely concentrically frilled on the outer portion of the disk; interspaces as wide or wider than ribs, crossed by fine, concentric lamellae, covered by minute, irregularly anastomosing, radial lineolation, and occasionally bearing low central riblets, particularly near margins of the valve; auricles unequal, anterior one larger, bearing about five scaly to nodulose radial riblets, with a well-developed byssal notch; margin below the notch with 4 to 6 free pectinidial teeth; posterior ear obtuse, with about five riblets bearing sharp, imbricating spines and microscopic lineolation over all; the first three or four marginal ribs below this ear may have similar spines. Left valve with narrower, sharper ribs which rarely bifurcate and are either smooth or sparsely ornamented with short, raised scales, variably distributed over the disk; interspaces sculptured about as on right valve; auricles unequal, anterior one without byssal notch, its anterior margin nearly perpendicular to hinge line, bearing about seven finely nodulose riblets; posterior auricle sometimes without ribs; both auricles microscopically wrinkled; hinge line imbricately scaled. Color of exterior of valves variously white, cream-color, yellow, orange-brown, or rosy-red, singly or in combination, the left valve always the more deeply colored. Ribs often darker than interspaces. Valve margins below the auricles typically with a narrow streak of reddish brown, the same color sometimes appearing inside, along the hinge line. White mottling, characteristically composed of chevron-shaped markings pointing towards the beaks, often occurs over part of one or both valves.

The entire left valve, and portions of the right, are coated with encrusting sponge in many of these specimens; a few have lepadomorph barnacles attached.

Type locality: California Academy of Sciences locality No. 41568, trawled off Juan Fernandez Island (Isla Más a Tierra), Chile, in 80-200 metres, R/V *Anton Bruun*, 15 December 1965. The log of the *Anton Bruun's* Cruise 12, during which the collections were made, records that on the date in question the ship was at 33° 29-42' S lat., 78° 55' W long., and that eight hauls were made with a 12 m shrimp trawl (E. H. Vokes, personal communication). Thirty-four specimens examined.

Dimensions: Holotype, length 38.4 mm; height perpendicular to hinge line 38.6 mm; diameter (joined valves) 9.2 mm. Measured paratypes: (a) length 33.2 mm; height 34.0 mm; diameter 7.3 mm; (b) length 32.1 mm; height 32.5 mm; diameter 6.9 mm; (c) length 32.5 mm; height 32.0 mm; diameter 7.4 mm.

Type material: Holotype, right and left valves, No. 54752, Department of Geology, California Academy of Sciences, San Francisco. Paratypes, Nos. 54753-54754, same institution. Additional paratypes are deposited in the following institutions: Museo Nacional de Historia Natural, Santiago, Chile; National Museum of Victoria, Australia; U.S. National Museum of Natural History, Washington, D.C.; and Los Angeles County Museum of Natural History, California.

Distribution: Mainland Chile: Calbuco to Chonos Archipelago, in 5-300 metres (Soot-Ryen, 1959). Juan Fernandez Islands.

Etymology: From the Greek *phalaros* — having a white patch.

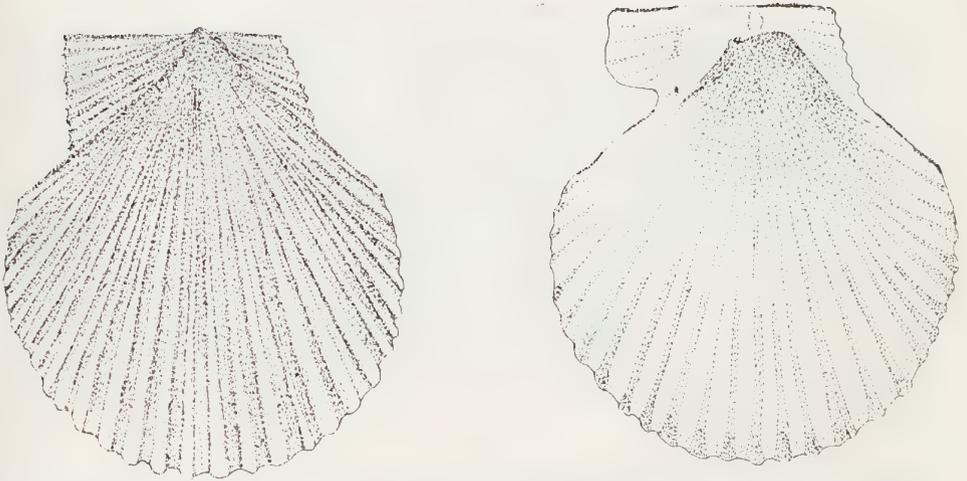
Commentary: The present specimens are in all probability conspecific with those cited and figured by Soot-Ryen (1959: 29-30, pl. 1, figs. 7, 8) as *Chlamys amandi* from numerous stations, on a variety of bottom types, in the vicinity of Chiloe Island and the Golfo de Ancud, Chile. This new record, therefore, represents a northwestward range extension of some 600 miles. Previous reports on the molluscan fauna of the Juan Fernandez Islands (Dall, 1909; Odhner, 1922) have not listed any Pectinidae. Of a total of 39 marine molluscan species then known to occur at Juan Fernandez, Odhner (1922) cited 13 as also occurring along the west American mainland; to this group is now added *C. phalara*.

Chlamys phalara differs from all other species of *Chlamys* known to be living in the eastern Pacific region in its oblique outline, thin shell texture, and fineness of ribbing. The color pattern is also unique among regional Pectinidae, although the white, chevron-shaped markings recall in a vague way those of *Chlamys (Leptopecten) monotimeris* (Conrad, 1837) (figured by Grau, 1959, pl. 35, fig. 2; as *C. [L.] latiauratus monotimeris*). Argentinian specimens of *Chlamys patriae* (Doello-Jurado, 1918) in the California Academy of Sciences collection show somewhat the same type of microsculpture, fine concentric lamellae in spaces between the ribs, traces of reddish brown on valve margins below the auricles, and — rarely — faint, opaque, white clouding on the left valve near the beak, similar to the white chevrons of *C. phalara*. From the new species, *C. patriae* differs in having single, not fascicled, ribs on the right valve, which are separated by deeper interspaces; and a sturdier shell with both the concentric lamellae and microscopic lineolation more strongly developed.

Chlamys phalara should also be compared with the Pliocene *Chlamys moerickei* (Hertlein, 1936) (replacement name for *Pecten tenuicostatus* Hupé, 1854, *non* Mighels & Adams, 1841), described from "los faluns de Chiloe," but best known from Tubul (Philippi, 1887; Mörlicke, 1896). Both species are thin-shelled, inequivalve and moderately to strongly inequilateral, with short hinge line and fine ribs which do not markedly indent the margin of the shell. The microsculpture of both consists of anastomosing radial lineolation overriding the scales on the ribs and the lamellae in the interspaces. The ribs of the right valve of *C. moerickei* show considerable variation in size and degree of fasciculation; these specimens are much like *C. patriae* in having large, single ribs. These three species seem to be phylogenetically closely related. *Chlamys moerickei* is a plausible ancestor of both *C. patriae* and *C. phalara*, which are probably allopatric differentiates of the more variable *C. moerickei* stock. *Chlamys phalara* differs from *C. moerickei* principally in having less developed microsculpture and a tendency towards narrower apical angle. The material at hand suggests that smaller maximum size and reduced variability of right-valve ribbing are other differences.

Herm (1969: 104, text-fig. 41) considered *Chlamys vidali* (Philippi, 1887) from the Chilean Pliocene to be similar and possibly ancestral to "*Chlamys amandi*," accepting Soot-Ryen's (1959) concept of the latter species; but I do not believe the relationship to be very close. *Chlamys vidali* differs from *C. phalara* in being equilateral, thicker shelled, more strongly ribbed, and approximately twice as large. Its hinge has strong bosses on either side of the ligamental pit, which are absent in *C. phalara*.

Chlamys



TEXT FIGURE 1. *Chlamys amandi* (Hertlein). Holotype (Museo Nacional de Historia Natural, Santiago), left and right valves. Drawn by Jean F. D. Smith, California Academy of Sciences.

Chlamys amandi (Hertlein, 1935)

Text fig. 1

Pecten australis Philippi, 1845: 56. "Patria: Insulae Cronos."

Non *Pecten australis* Sowerby, 1842: 76, pl. 19 figs. 210, 220. "Swan River [Australia]."

Pecten rosaceus Stempell, 1899: 228. "Fundort: Calbuco [Chile]." New name for *Pecten australis* Philippi, non Sowerby. Dall, 1909: 256. "Calbuco, Chilöe, and the Chonos Islands."

Non *Pecten rosaceus* Deshayes, 1863: E-31. [nomen nudum].

Non *Pecten varius* Linné var. *rosacea* Locard, 1888: 34 [162]; non *P. distortus* Da Costa var. *rosacea* Locard, *ibid.*: 46 [174]; non *P. tigrinus* Muller var. *rosacea* Locard, *ibid.*: 117 [245]; non *P. laevis* Pennant var. *rosacea* Locard, *ibid.*: 120 [248].

Pecten (Chlamys) amandi Hertlein, 1935: 305. New name for *Pecten australis* Philippi, non Sowerby. *Chlamys amandi* (Hertlein), Grau, 1959: 81, 83. Hertlein, 1972: 4. Non Soot-Ryen, 1959: 30, pl. 1, figs. 7, 8. Non Herm, 1969: 104, text-fig. 41.

Type locality: Chonos Archipelago, Chile (approximately 44°-46° S lat., 73° W long.).

Type material: Holotype, Museo Nacional de Historia Natural, Santiago, Chile.

Original Description: "P. testa subaequali, subaequilatera, ovata; radiis 30-34 laevibus; interstitiis transverse lamellosis; valva superiore rubra, subunicolore; inferiore pallida; auriculis inaequalibus costatis. Alt. 10 1/4", diam. 9", crass. 3 1/3".

"Diese Art hat fast ganz den Umriss, die Zahl der Rippen, die Bildung der Ohren wie *P. ornatus*, unterscheidet sich aber leicht durch folgende Kennzeichen: 1) der Bauchrand ist weit stärker gebogen, und beschreibt mehr als einen halben Kreis; 2) die Rippen sind alle gleich gross, nicht abwechselnd kleiner; 3) dieselben sind vollkommen glatt, nicht schuppig" (Philippi, 1845).

Commentary: Stempell's (1899) replacement name, *Pecten rosaceus*, is considered preoccupied by Locard's (1888) use of the same epithet at the varietal rank, in accordance with Article 17 of the International Code of Zoological Nomenclature.

Type material of *Pecten australis* Philippi (that is, *Chlamys amandi*) has never been illustrated. Its type locality, Chonos Archipelago, undoubtedly influenced Soot-Ryen's (1959) application of the name to a species common in the adjacent Golfo de Ancud. A photograph of the holotype has generously been supplied by Dr. Nibaldo Bahamonde N.; while not suitable for publication, it clearly shows the characters of the shell and substantiates Philippi's diagnosis, with the possible exception of his comparison to "*P. ornatus*". A drawing made from the photograph is reproduced here as Text Fig. 1. The holotype is moderately convex, substantial, nearly equilateral, with 34 straight, approximately equal-sized ribs which are narrower than their interspaces and strongly crenulate the shell margin. The ribs are borne singly. The auricles are unequal, but not as markedly so as in *Chlamys ornata* (Lamarck, 1819) (figured by Abbott, 1974: pl. 19, fig. 5140); they bear strong radiating ribs, 9 on the anterior and 7 on the posterior auricle of the left valve. The right valve is uniformly light coloured within; the exterior of the left valve has three darker concentric zones.

Several authors (von Martens, 1881; Smith, 1885; Grau, 1959) have suggested the synonymy of *Chlamys patagonica* (King, in King & Broderip, 1832) and *C. amandi* — none apparently having compared type material of both nominal species. Dall (1909) reported *C. patagonica* to range, on the Pacific coast of Chile, from Chiloe Island and Puerto Montt southward to the Magellanic region. The Lund University Expedition did not collect it in the regions around Puerto Montt, and Soot-Ryen (1959: 30, 72) considered records from north of about 52° south latitude to have been based on misidentifications. The holotype of *C. amandi* is clearly distinct from *C. patagonica* as figured by Sowerby (1842) and Grau (1959), having a much narrower umbonal angle and proportionally longer hinge line. In outline it more nearly resembles *Pecten rufiradiatus* Reeve, 1853. The latter species, with type locality "Strait of Magalhaens," has not been positively identified since its original description, and various authors have considered it synonymous with other Magellanic species.

REFERENCES

- ABBOTT, R. T., 1974. American seashells, second edition. 663 pp., 24 pls. New York: Van Nostrand Reinhold Company.
- DALL, W. H., 1909. Report on a collection of shells from Peru, with a summary of the littoral marine Mollusca of the Peruvian zoological province. *Proc. U. S. Nat. Mus.*, 37 (1704): 147-294, pls. 20-28.
- DESHAYES, G. P., 1863. Conchyliologie de l'Île de la Réunion (Bourbon). *Annexe E. Notes sur l'Île de la Réunion par L. Maillard.* 144 pp., 14 pls. Paris: Dentu.
- GRAU, G., 1959. Pectinidae of the eastern Pacific. *Univ. South. Calif., Allan Hancock Pac. Exped.*, 23, 8 + 308 pp., 57 pls.
- HERM, D., 1969. Marines Pliozän und Pleistozän in Nord- und Mittel-Chile unter besonderer Berücksichtigung der Entwicklung der Mollusken-Faunen. *Zitteliana [Abhandl. Bayerisch. Staatssamm. Paläontol. u. hist. Geol.]*, 2, 159 pp., 18 pls.
- HERTLEIN, L. G., 1935. The Templeton Crcker Expedition of the California Academy of Sciences, 1932. No. 25. The Recent Pectinidae. *Proc. Calif. Acad. Sci.*, ser. 4, 21 (25): 301-328, pls. 18, 19.
- , 1936. Three new sections and rectifications of some specific names in the Pectinidae. *Nautilus* 50 (2): 54-58.
- , 1972. Description of a new species of *Chlamys* (Mollusca: Pelecypoda) from the Galápagos Islands. *Proc. Calif. Acad. Sci.*, ser. 4, 39 (1): 1-5.
- LOCARD, A., 1888. Contributions à la faune malacologique Française XI. Monographie des espèces appartenant au genre *Pecten*. *Ann. Soc. Linn. Lyon, Nouvel. Ser.*, 34: 133-287.
- MARTENS, E. C. VON, 1881. Mehrere von Sr. Maj. Schiff Gazelle von der Magalhaenstrasse, der Ostküste Patagoniens und der Kerguelen-Insel mitgebrachte Meeres-Conchylien. *Sitz.-Ber. Gesellsch. Naturforsch. Freunde Berlin*, 1881: 75-80.

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- MÖRIKE, W., 1896. Versteinerungen der Tertiärformation von Chile. *Neues Jahrb. Mineral., Geol. u. Palaeontol., Beil.-Bd.*, 10: 548-612, pls. 11-13.
- ODHNER, N. Hj., 1922. Mollusca from Juan Fernandez and Easter Island. In: Skottsberg, C., ed., *The Natural History of Juan Fernandez and Easter Island*, 3 [Zoology, part 2] (22): 219-254, pls. 8, 9.
- PHILIPPI, R. A., 1845. Diagnosen einiger neuen Conchylien. *Archiv f. Naturgesch.*, Jahrgang 11, 1: 50-71.
- , 1887. Los fosiles terciarios i cuartarios de Chile. 256 pp., 58 pls. Santiago.
- SMITH, E. A., 1885. Report on the Lamellibranchiata collected by H. M. S. Challenger during the years 1873-1876. *Rep. Sci. Res. Voy. H. M. S. Challenger 1873-1876, Zoology*, 13 (35): 1-341, pls. 1-25.
- SOOT-RYEN, T., 1959. Reports of the Lund University Chile Expedition 1948-49. 35. Pelecypoda. *Lunds Universitets Arsskrift, N. F. Avd. 2*, 55 (6): 1-86, pls. 1-4.
- SOWERBY, G. B., II, 1842. Monograph of the genus *Pecten*. *Thesaurus conchyliorum, or monographs of genera of shells*, 1, part 2: 45-78, 81-82, pls. 12-20.
- STEMPELL, W., 1899. Die Muscheln der Sammlung Plate. *Zool. Jahrb., Suppl.Bd. 5 (Fauna Chilensis, Bd. 2)*, Heft 1: 217-250, pl. 12.